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pinnae, or only a few stunted ones, beyond the fertile pinnae. This condition apparently is produced by injury caused by strong winds whipping the tender young plants against the porch wall; but one year one of the fronds on the fern bed had no sterile pinnae above the fertile ones and only one stunted one below.

I planted two royal ferns in the fern bed in August, 1913, and in each of the three following years one began growing about April 21 and the other about April 26. Sterile and fertile fronds appear at the same time, some sterile fronds coming as late as July 15. The sterile parts of the fronds are colored light salmon or light purplish cinnamon when unfolding and the fertile portion is light green, sometimes tinged with yellowish. The mature fruiting part of the frond is dark cinnamon-brown and the dark green sporangia have ripened about May 25 and all have fallen by June 1, the fruiting portion remaining till late in July.

KUTZTOWN, PA.

(*To be continued*)

Notes on Hippochaete¹

OLIVER ATKINS FARWELL

HIPPOCHAETE LAEVIGATA.

In a friendly criticism of Standley's Ferns of Greene Co., Mo., Mr. B. F. Bush, in the AMERICAN FERN JOURNAL for October-December, 1916, adopts the name *Equisetum Kansanum* Schaffner for the smooth annual-stemmed species that for many years has passed for *Equisetum laevigatum* Braun, transferring the latter name to the perennial plant that was later described as *Equisetum hyemale* var. *intermedium* by A. A. Eaton,

¹ In Mem. N. Y. Bot. Gard. 6: 461 ff., Mr. Farwell gives his reasons for separating the scouring-rushes from the true horse-tails as a separate genus under the name of *Hippochaete*.—Ed.

once more exemplifying the wholly unsatisfactory and entirely indefensible method of adopting the herbarium specimens of older authors as types when said authors did not so consider them. The writer hasn't much sympathy with the modern custom of making a dried specimen, in most instances only a fragment of a plant, a specific type. Herbarium specimens are too notoriously unreliable. They may be destroyed, mutilated, lost, interchanged, mislabeled, and, except in the case of very small herbaceous species, do not give one the slightest conception of the habit of the species; again in the distribution of exsiccatae two or more species are frequently sent out under the same number and name and consequently the co-type may not always be the same as the type. *Descriptions* are the *real types* and herbarium specimens, like plates, are but illustrations of the species and sometimes, for one or another of the above named causes, are only a means to added confusion. The transfer of name was made because of the discovery in the Herbarium of the Missouri Botanical Garden of a so-called co-type of *Equisetum laevigatum* Braun which proves to be the *Equisetum hyemale* var. *intermedium* of A. A. Eaton. It seemed rather peculiar to me that Engelmann, who supplied the material for the description and who as translator and editor of Braun's MSS. is the sponsor, in a measure, of the species, should have so misunderstood his own species as to have misapplied it and to have permitted such misapplication in our manuals without having called the attention of their authors thereto. A careful study of the original description will show that Braun's species has not been misunderstood, that his description applies to the annual-stemmed plant that has been passing under Braun's name. It is true that Braun thought *E. laevigatum* to be a perennial-stemmed species, but at that time all American species of this group were so con-

sidered, and it has not been until very recently that it has been proved that there were annual-stemmed species amongst the scouring rushes of America. Braun's description calls for a species with a *smooth stem*, having the leaves of the *green sheath* with *one central ridge on the lower half* and *two lateral ridges on the upper half*, the central one being depressed and flattened out in that section, the teeth being caducous and leaving a *truncate-dentate margin* to the sheath; and with *obtuse spikes*. The contrasting characters of Eaton's var. *intermedium* are a smooth or more generally *rough stem*, *ash-grey sheaths* with a *black band above and below*, caducous teeth leaving a *crenulate margin* and *apiculate spikes*. In Braun's explanatory remarks, "The sheaths, as has been stated, have generally only a narrow black limb, but some specimens have also, especially on the lower sheaths, a black girdle at base; in one specimen I have seen the whole sheath black," there is a hint that the *intermediate* plant was included in the species but no part of the description was drawn from it and it certainly was not considered as the type. The transference, therefore, of the name *laevigatum* from the smooth, annual stemmed species, for which it has so long and appropriately stood, to a rough perennial-stemmed species has been made without solid foundation of fact and should not be generally accepted. *Equisetum Kansanum* Schaffner = *E. laevigatum* A. Br. = *Hippocheete laevigata* (A. Br.) Farwell.

HIPPOCHAETE PREALTA.

Both Rafinesque's and Braun's descriptions of their respective species (*Equisetum prealtum* and *E. robustum*) were of the largest (40 or more ridges and leaves to the stem), and oldest forms (sheaths with deciduous teeth leaving a truncate margin). Engelmann's *E. robustum* var. *minus* was a smaller (28–31 ridges and leaves)

form with more persistent teeth; his var. *affine* still smaller (20–25 ridges and leaves) with persistent rough teeth, finally becoming white. The variety *minus* probably is only a variation due to age and should not, for that reason, be maintained. I have seen nothing answering to the description of the variety *affine*; possibly Eaton's *E. hiemale* var. *pumilum*, with persistent, white teeth is a phase of it. Further study is necessary before final determination of its status. In *Fern Bulletin* Vol. XI, p. 111, 1903, Eaton transferred this varietal name to the American plant that had been passing under the name of *E. hyemale* and I, following Eaton's lead, retained the name under *Hippochaete*, Mem. N. Y. Bot. Gard. VI, 467, 1916. This transfer of Engelmann's varietal name was without warrant. Engelmann himself says the sheaths are *too short* to be *E. hyemale* and this character together with that of the *teeth being persistent finally turning white* is sufficient to prove that it is not the plant with caducous teeth and long sheaths. So far as I am able to ascertain the American plant is without a name and I propose for it the varietal name *pseudohyemalis*. The variety is: *Hippochaete prealta* (Raf.) Farwell, var. ***pseudohyemalis*** new name.

Equisetum hyemale Amer. authors, not Lin. 1753.

Equisetum hiemale var. *affine* (Engelm.) A. A. Eaton, Fern Bull. XI, 111, 1903, but not *E. robustum* var. *affine* Engelm. 1843.

Hippochaete prealta var. *affinis* (Engelm.) Farwell, Mem. N. Y. Bot. Gard. VI, 467, 1916, but not *E. robustum* var. *affine* Engelm. 1843.

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